(6 pages) Reg. No. : .....

Code No. : 30418 E **Sub. Code : AMMI 51**

B.Sc. (CBCS) DEGREE EXAMINATION, NOVEMBER 2022.

Fifth Semester

Microbiology – Core

AGRICULTURAL MICROBIOLOGY

(For those who joined in July 2020 onwards)

Time : Three hours Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

1. Most of the soil organism is ————.
   (a) Psycrophiles (b) Mesophiles
   (c) Thermophiles (d) All of the above

2. The red colour of soil is due to ————.
   (a) Hematite (b) Goethite
   (c) Glavconite (d) Maghemite

3. When both partners are affected negatively the nature of interaction is
   (a) Commensalism (b) Competition
   (c) Predation (d) Amensalism

4. Mycorrhiza represents
   (a) Symbiotic association between a fungus and liverworts
   (b) Parasitic association between a fungus and an alga
   (c) Symbiotic association between a fungus and roots of higher plants
   (d) Parasitic association between a fungus and roots of plants

5. Which of the following is aerobic nitrogen – fixing bacterium?
   (a) Azotobacter (b) Clostridium
   (c) Rhodospirillium (d) Rhodospseudomonas

6. Which of the following bacteria cannot fix atmospheric nitrogen?
   (a) Nostoc (b) Anabena
   (c) Oscillatoria (d) Lactobacillus

7. Biofertilizer ————.
   (a) Kill pests (b) Prevent pest growth
   (c) Retain soil fertility (d) All of the above

8. ———— control butterfly caterpillars.
   (a) *Bacillus thuringinesis*
   (b) *Lactobacillus*
   (c) *Acetobacter aceti*
   (d) None of the above

9. Ergot of rye is caused by a species of
   (a) Phytophthora (b) Uncinula
   (c) Ustilago (d) Claviceps

10. Black stem rust of wheat is caused by?
   (a) *Alternaria solani*
   (b) *Ustilago nuda*
   (c) *Puccinia graminis*
   (d) *Phytophthors infestans*

PART B — (5 × 5 = 25 marks)

Answer ALL questions, choosing either (a) or (b).
Each answer should not exceed 250 words.

11. (a) Explain the chemical properties of soil.

Or

(b) Write about the factors that influencing soil microbial population.

12. (a) Differentiate between commensalisms and predation.

Or

(b) Give a brief description of rhizosphere. Mention the role of micro organisms involved in rhizosphere.

13. (a) Distinguish between symbiotic and non symbiotic nitrogen fixation.

Or

(b) Write about nitrogen fixers.

14. (a) Give a brief note on liquid biofertilizer and their applications.

Or

(b) Define viral pesticide. Write short notes on NPVs, non occluded baculoviruses and granulosis virus.

15. (a) Describe the symptoms associated with microbial plant diseases.

Or

(b) Give an account on citrus canker.

PART C — (5 × 8 = 40 marks)

Answer ALL questions, choosing either (a) or (b)

Each answer should not exceed 600 words.

16. (a) Describe various types of soil microbes and their importance.

Or

(b) Discuss the role of micro organisms in carbon cycle.

17. (a) Describe microbial interactions and its different types.

Or

(b) Explain the importance of

(i) Rhizosphere

(ii) Phyllosphere effect.

18. (a) Briefly explain about biological nitrogen fixation.

Or

(b) Give short notes on the following :

(i) Nitrification

(ii) Denitrification

(iii) nif genes

(iv) Heterocyst

(v) Frankia.

19. (a) Discuss briefly the production of Rhizobium inoculants and their field applications.

Or

(b) Elaborate the morphology, isolation, mass production of VAM fungi. Add note on their applications and importance.

20. (a) Give an account on white rust of crucifers.

Or

(b) Describe the symptoms, disease cycle and description of late blight of potato.

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